OCTOBER 1976
No. 10

FISHING INFORMATION

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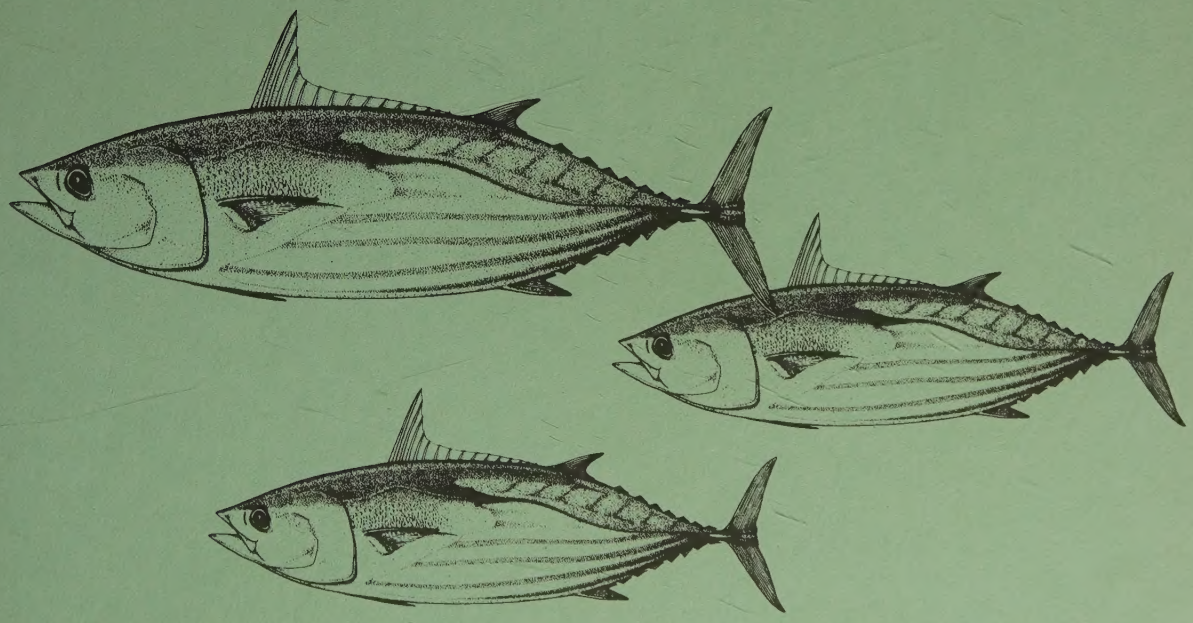

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U.S. DEPARTMENT OF COMMERCE
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FISHING INFORMATION

OCTOBER 1976 , No. 10

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PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

The secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department.

Submitted for publication - November 17, 1976

CONTENTS

		Page
Acknowledgements		iv
Sea Surface Temperature and Environmental Conditions - October 1976, F. Miller		1
ENVIRONMENTAL CHARTS, PACIFIC OCEAN - October 1976		
Figure 1.	Sixteen-year mean (1961-1976) observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction	4
Figure 2.	Observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction	5
Figure 3.	Mean sea surface temperature, eastern North Pacific Ocean. Square shows temperatures at weathership station. Numerals on shore are temperatures at coastal and lightship stations	6
Figure 4.	Mean sea surface temperature chart, western North Pacific Ocean	7
Figure 5.	Deviation of sea surface temperatures, eastern North Pacific Ocean from 20-year mean (1948-67). Hatched areas are colder in 1976	8
Figure 6.	Deviation of sea surface temperatures, western North Pacific Ocean from 20-year mean (1948-67). Hatched areas are colder in 1976	9
Figure 7.	Deviation of sea surface temperatures, eastern North Pacific Ocean from those of October 1975. Hatched areas are colder in 1976	10
Figure 8.	Mean sea surface temperatures, eastern tropical Pacific Ocean. Numerals on shore are temperatures at coastal stations	11
Figure 9.	Deviation of sea surface temperatures, eastern tropical Pacific Ocean from 20-year mean (1948-67). Shaded areas are colder in 1976. Contours are dashed in sparse data areas	12
Figure 10.	Surface temperature and salinity and subsurface temperature structure from expendable bathythermograph observations between Seattle and Honolulu, October 4-10, 1976	13
Figure 11.	Surface temperature and salinity and subsurface temperature structure from expendable bathythermograph observations between San Francisco and Honolulu, October 13-19, 1976	14
Figure 12.	Surface temperature and salinity and subsurface temperature structure from expendable bathythermograph observations between Los Angeles and Honolulu, October 6-11, 1976	15

ENVIRONMENTAL CHARTS ANALYZED BY:

F. Miller (Figures 8 and 9)
J. Renner (Figures 1, 2, 3, 4, 5, 6, 7, 10, 11, 12 and 15 day Supplement)

TECHNICAL EDITOR:
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R. Allen, H. Orr

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L. Collins at Kains Island Lightstation; I.G. McNeil at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California
Fishing Vessels, *Carol S., Concho, Diana C., Gina Karen, Jo Linda, Marco Polo, Maria C.J., Marla Marie, Maria Elena, Missouri, Polaris, Rosa Olivia, Santa Elena, Santa Rosa, Venturous,* and *Willa G.*

Expendable bathythermograph and salinity observations are made by the mates and engineers of the *California*, and *Hawaiian Enterprise* of the Matson Natigation Co. The data are processed under supervision of D. R. McLain at the NMFS Pacific Environmental Group, using computer facilities of the Fleet Numerical Weather Central, Monterey. The project is partially supported by the National Science Foundation and the Office of Naval Research.

Sea Surface Temperature and Environmental Conditions

F. Miller

Eastern North Pacific

During October sea surface temperatures (SST) normally show seasonal cooling of 2 to 4°F (1.1 to 2.2°C). However, the rate of cooling is usually not uniform over the north Pacific. Depending on whether low or high surface pressure systems dominate a particular region, SST's will cool more or less than seasonal rates. At this time of year heavy cloud cover and high seas and winds normally develop across the Pacific north of 40°N. South of 40°N the eastern and western subtropical high pressure systems usually cause light seas and considerable solar heating at the sea surface.

In October 1976 a very large and intense stationary low pressure system developed off the Aleutian Islands near 50°N, 175°W. Around the periphery of this low, storms developed with unusually high winds and severe weather. The wind mixing of the ocean surface layer was extensive and caused SST's to drop more than 2°F (1.1°C) below normal (Figure 5). From 30°N to 45°N between 145°W and 180° the decrease in SST's from September 1976 was more than 4°F (2.2°C). This was a considerably greater decrease than normal and occurred in a frontal region with high winds between the Aleutian low pressure system and a high pressure ridge extending from British Columbia southwestward into the Pacific.

Along the U.S. west coast and extending southwestward, above normal SST's (Figure 5) were associated with above normal surface pressures and lower than normal winds and cloud cover. In October there was a northward expansion of above normal SST's due to the persistence of a high pressure system along the U.S. west coast (Figures 2 and 5).

In a broad zone extending from British Columbia to Hawaii, weather fronts moving into the eastern Pacific became more intense in October 1976 partly because of the stronger than normal SST gradients, particularly east of 145°W from 30°N to 45°N. A southerly wind trajectory over relatively warm water (Figures 2 and 5) ahead of weather fronts combined with northerly winds over a cold north Pacific will probably cause above normal weather activity north of 30°N between 150°W and 130°W in November.

Western North Pacific

A deep and persistent low pressure system with extensive cloud cover and high winds developed and became nearly stationary to the east of northern Honshu, Japan. The negative SST anomalies (Figure 6) and very strong north-south SST gradients (Figure 4) from 40°N to 45°N were associated with gale force winds and ocean mixing along the southern edge of the low system. This low was linked with the Aleutian low system through fast moving weather fronts which resulted in an unusually prolonged period of very rough and cold seas over the north Pacific.

South of 35°N the SST's were slightly above normal in association with the western center of the subtropical high pressure area from 25°N to 30°N between 130°E and 170°E.

Eastern Tropical Pacific

Sea surface temperatures (SST) normally decrease slightly in October north of 5°N along the equator west of 150°W. In the southern hemisphere to 20°S and west of 90°W SST's increase less than 1°F (0.6°C). In the Peru Current east of 90°W and along the equator to 150°W upwelling and surface wind mixing normally cause SST's to reach the annual minimum between September and October. The equatorial ocean front usually has a strong north-south temperature gradient along the equator from Ecuador to the Galápagos Islands, and a slightly weaker gradient westward to 140°W where the front normally becomes weak.

In October 1976, SST's (Figure 8) were above normal over more of the eastern tropical Pacific than in any month since January 1973, which marked the end of the 1972-73 El Niño condition. During October the equatorial region covered by positive SST anomalies greater than 2°F (1.1°C) expanded westward to at least 180° (Figure 9).

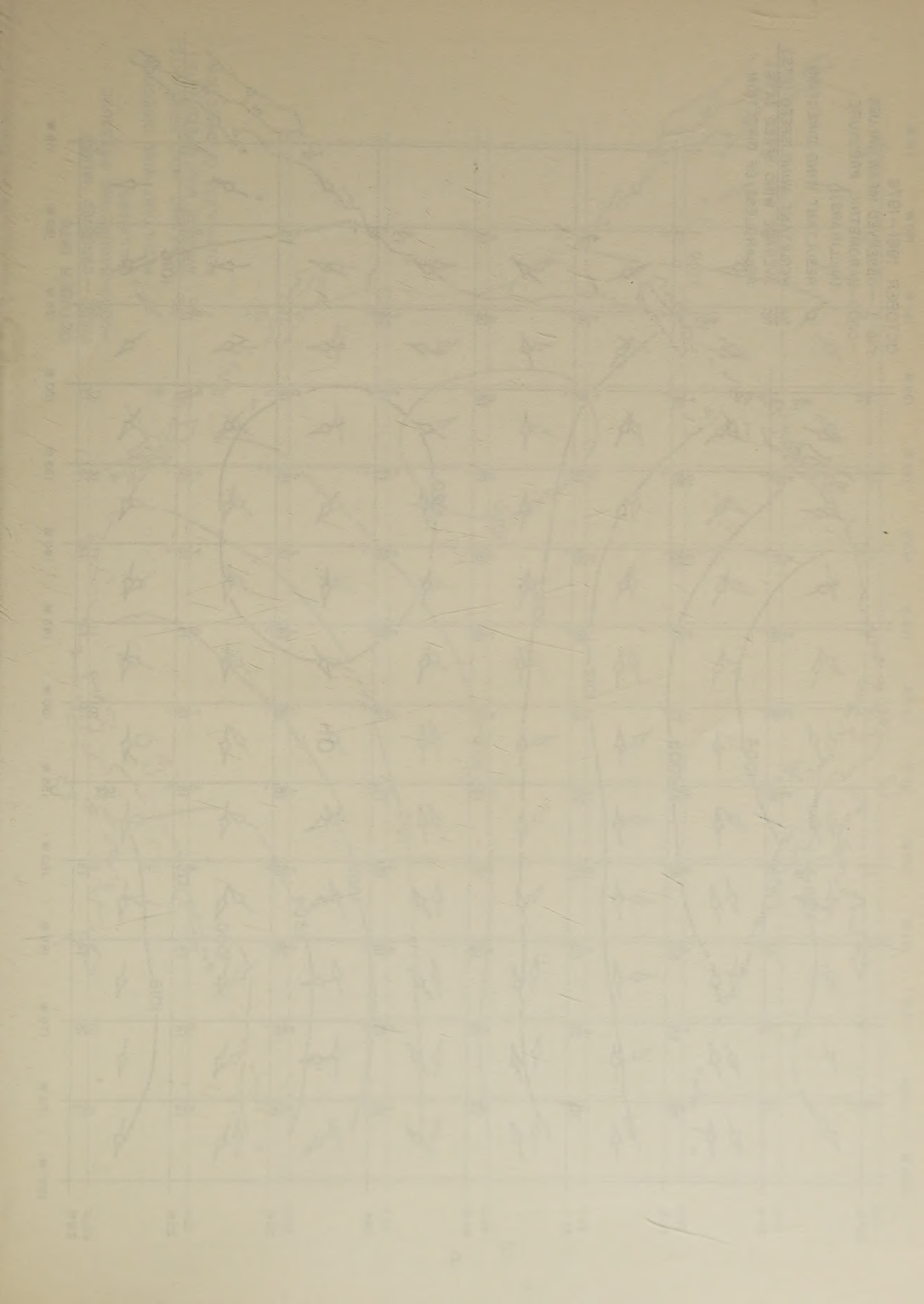
In the northern hemisphere north of 10°N SST's were significantly above normal in the fishing grounds west of Baja California and around the Revillagigedo Islands. Also, between 120°W and 140°W from 5°N to 15°N tropical tuna fishing was active in September and October over a wider latitudinal range because of light winds and seas and above normal SST's. The light winds and warm seas aided fishermen in the local banks of Baja California and the Revillagigedo Islands. The negative anomalies (Figure 9) east of 100°W from 5°N to 10°N were associated with rough weather and high surface winds along and south of the intertropical convergence zone.

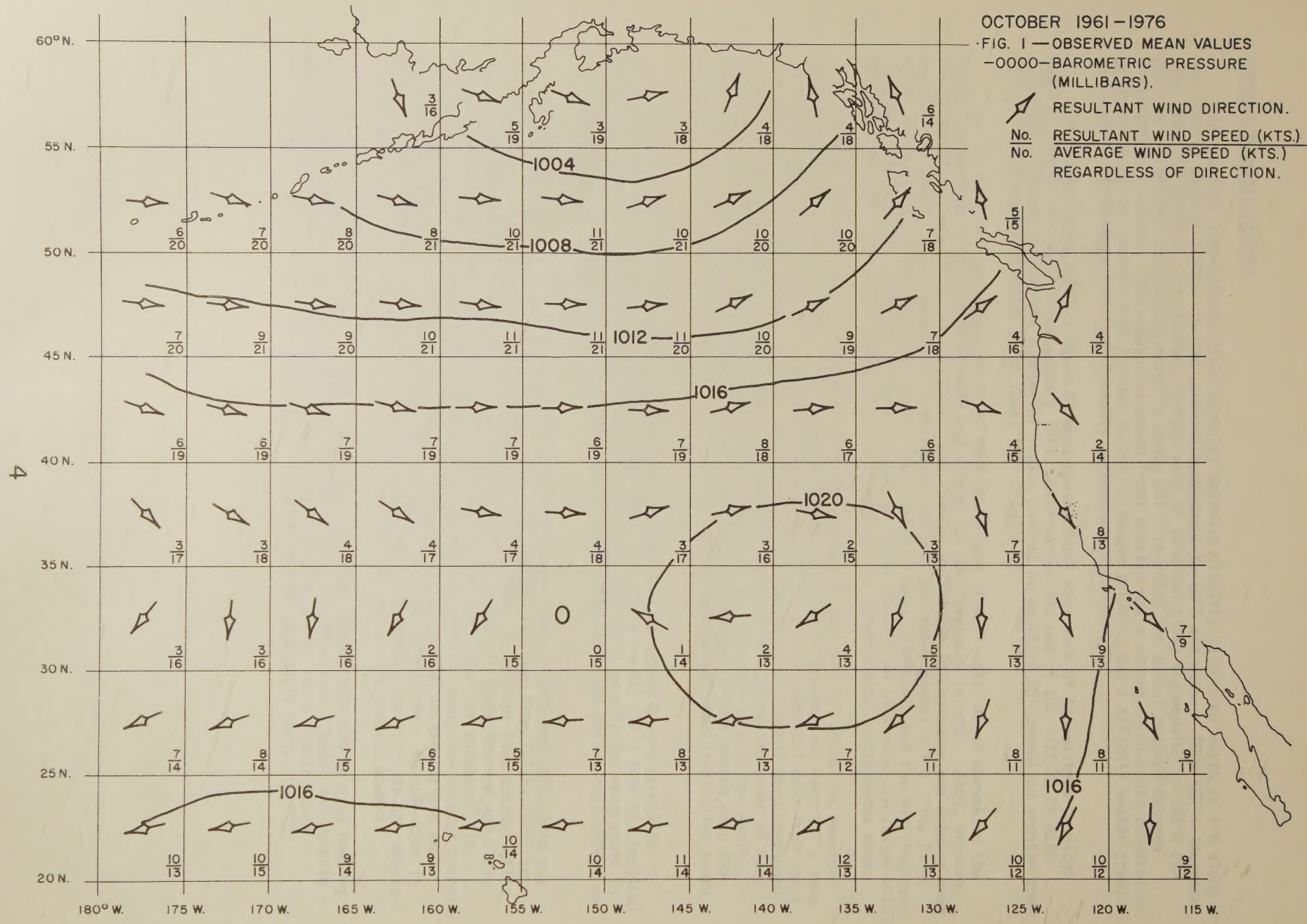
Between 80°W and 120°W from 5°N to 20°S the pattern of positive SST anomalies remained nearly unchanged from September 1976. However, along the coast of Ecuador and Peru SST's were near normal except in a coastal area from 6°S to about 80°S. In this area SST data from ships indicated that the warm pocket of water usually found off the coast of central Peru continued to move close to the coast at times during the month. South of 15°S along the coast of Peru SST's were 2 to 4°F (1.1 to 2.2°C) below normal (Figure 9) as they were in previous months. Above normal winds and extensive cloud cover associated with weather fronts moving onto the coast of Chile kept surface layers of the ocean well mixed and coastal upwelling active south of 15°S.

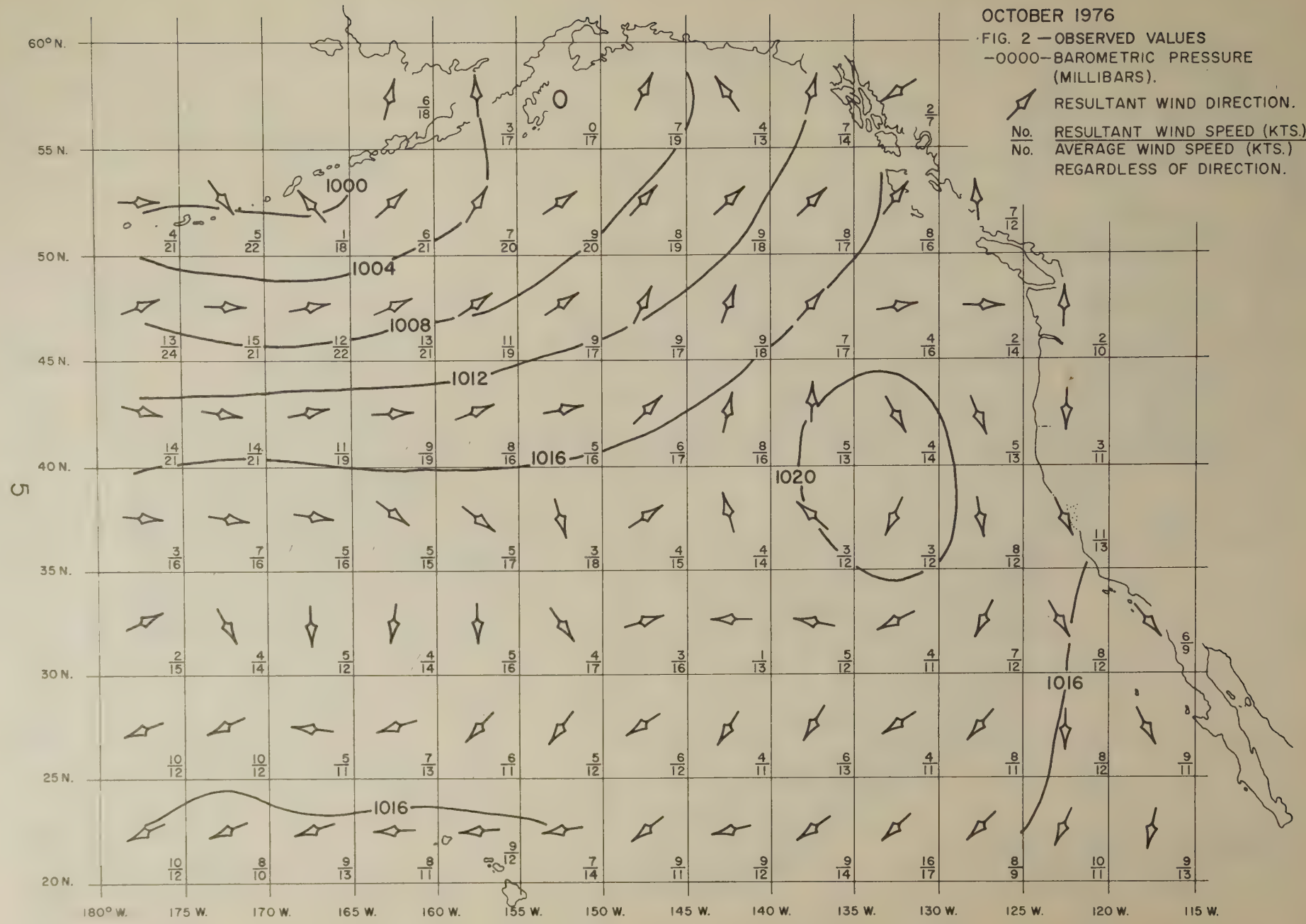
Past records of El Niño years show a trend in the SST's to return toward normal in October at coastal stations. However, in other years with above normal SST's over the tropical Pacific during the southern spring, as shown in Figure 9, the SST's usually increase again in December and January. This event marks the peak of an El Niño cycle and has a great affect on the Anchoveta fishing industry.

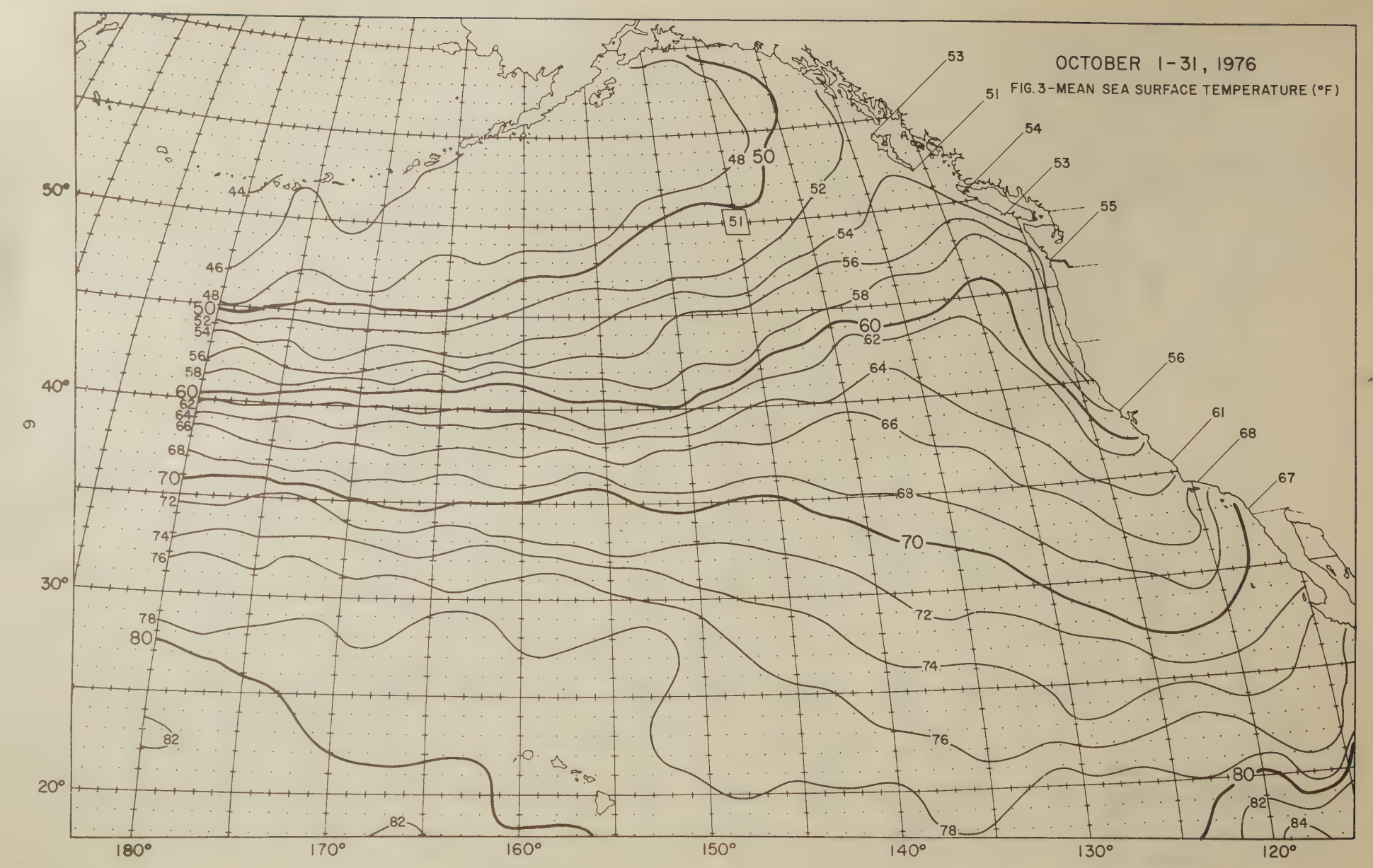
Since June 1976, the surface pressure gradient between Peru at 16°S and 30°S, 90°W has remained below normal most of the time. The SST's at coastal stations from Talara (5°S) to Callao, Peru (11.5°S) have been above normal since March 1976. By October 1976 coastal SST's were decreasing seasonally toward normal. However, off the coast of South America and along the equator the warm anomalies expanded westward to the 180th meridian and poleward. In addition, the satellite cloud photos have shown a marked reduction in heavy low stratus coverage west of Peru since June. Apparently, more heating was getting through to the surface and caused more cumuliform cloud development off the coast of Peru and Ecuador. At this time it seems unlikely that, if the atmospheric circulation remains abnormal, the SST's in the tropical and subtropical areas of the eastern Pacific will return to normal for several months.

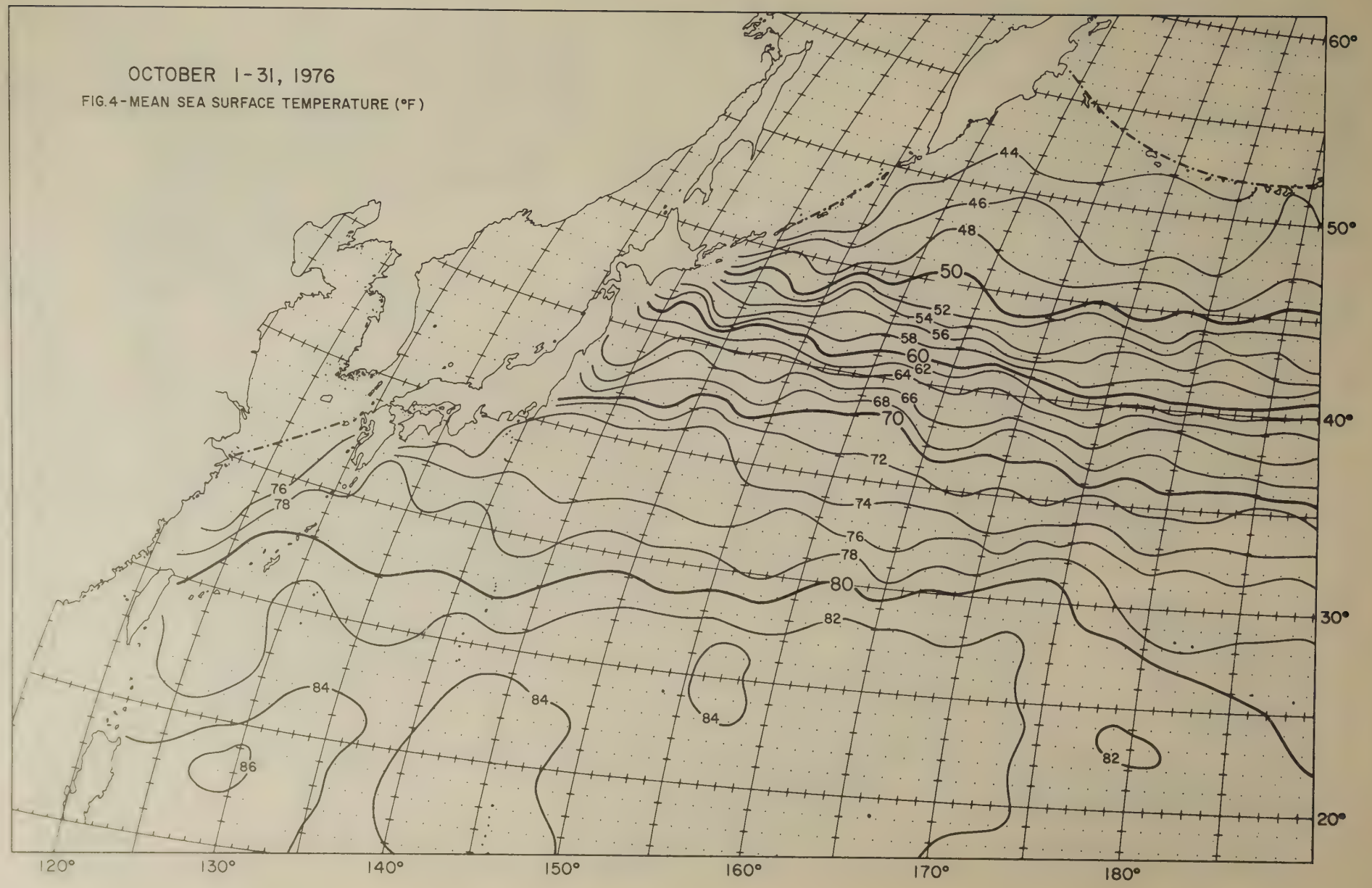
With southern summer approaching, the abnormal air-sea interactions and *in situ* heating will probably lead to a marked increase in the SST's along the coasts of Ecuador and Peru in December and January 1977, just as occurred in other El Niño years. As a result, tuna fishing may be good off Peru but Anchoveta fishing may not be good until early in 1977.

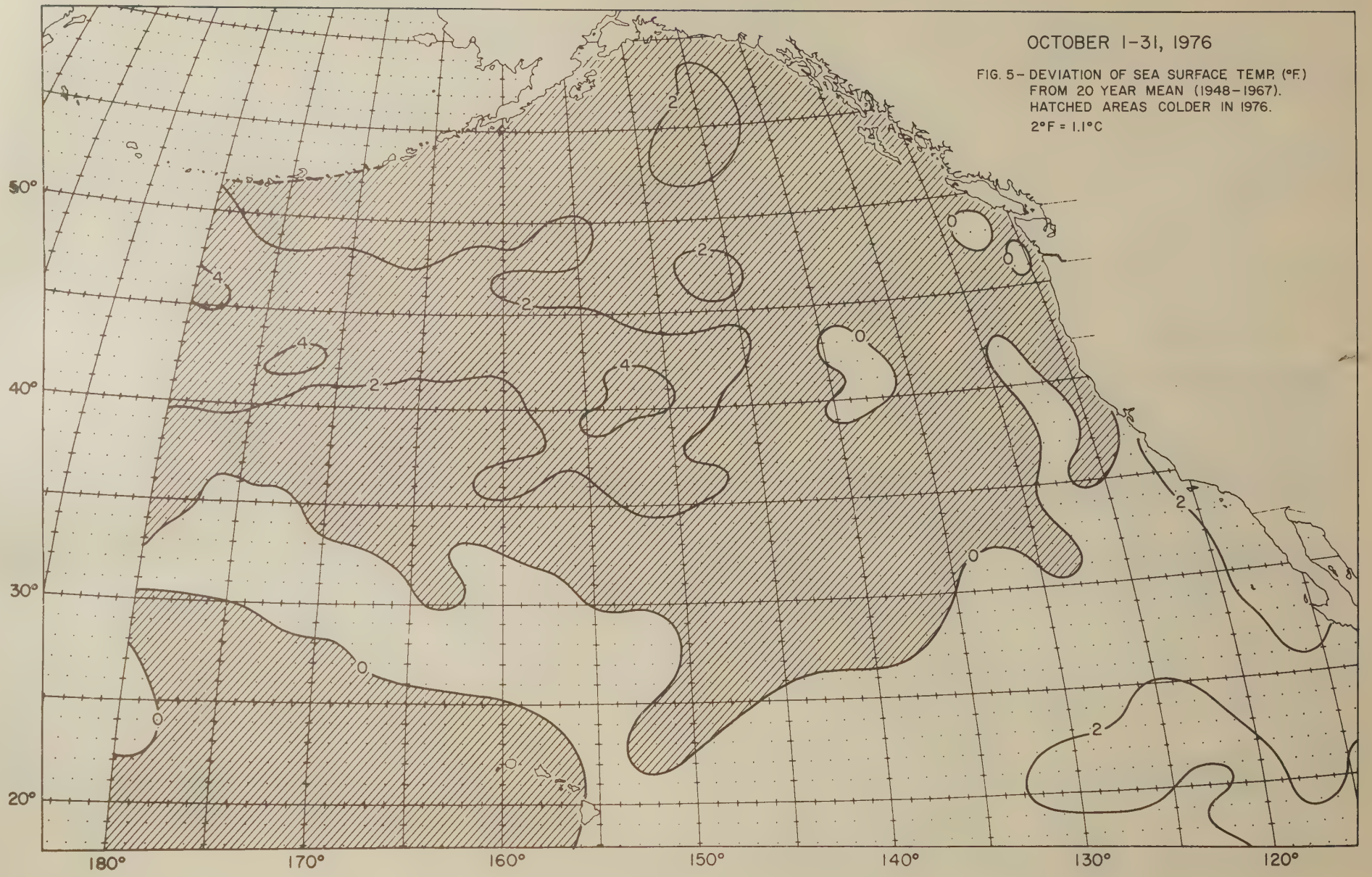


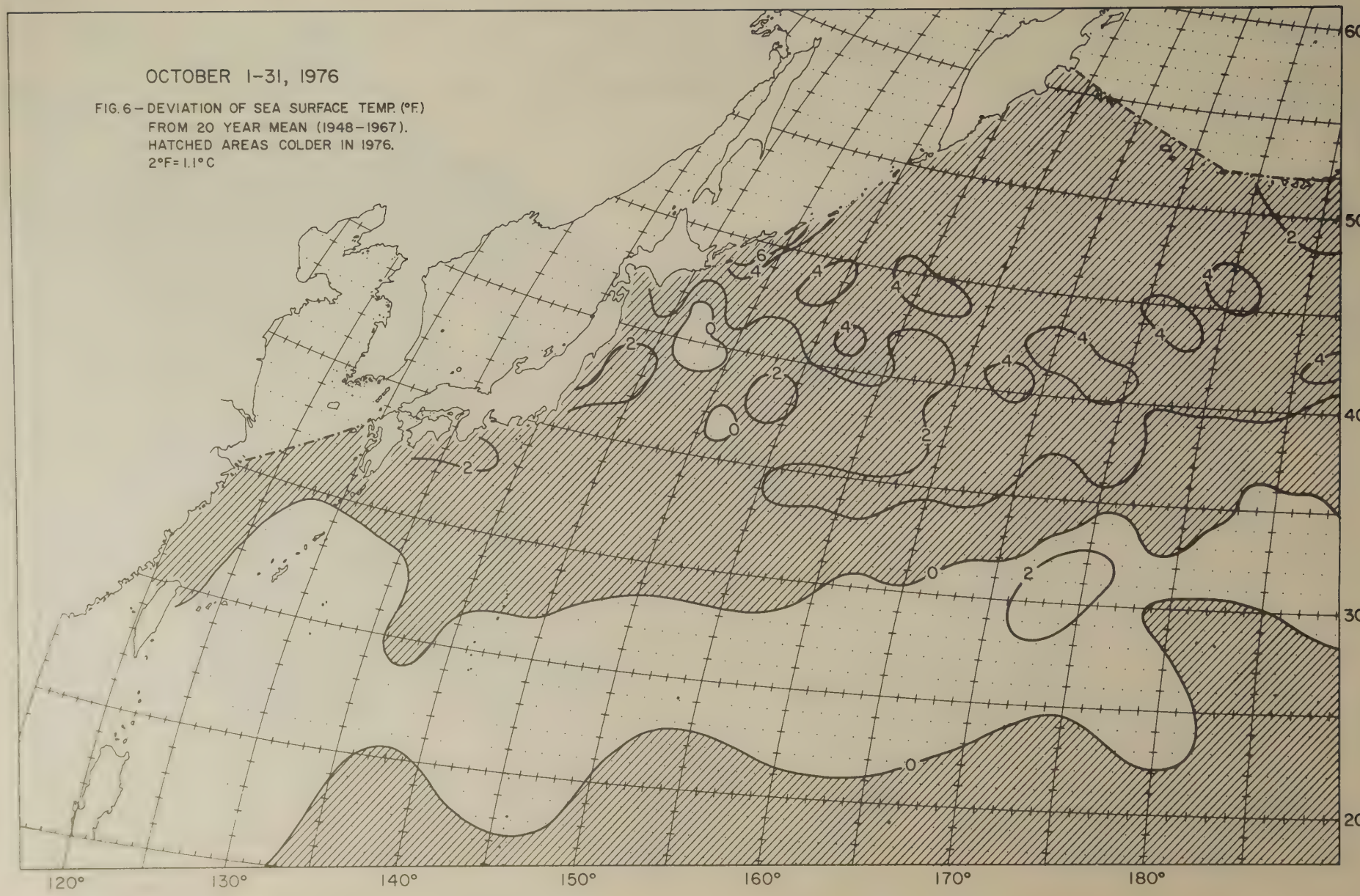

OCTOBER 1961–1976
FIG. 1 — OBSERVED MEAN VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. / No. RESULTANT WIND SPEED (KTS.) / AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
1016
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

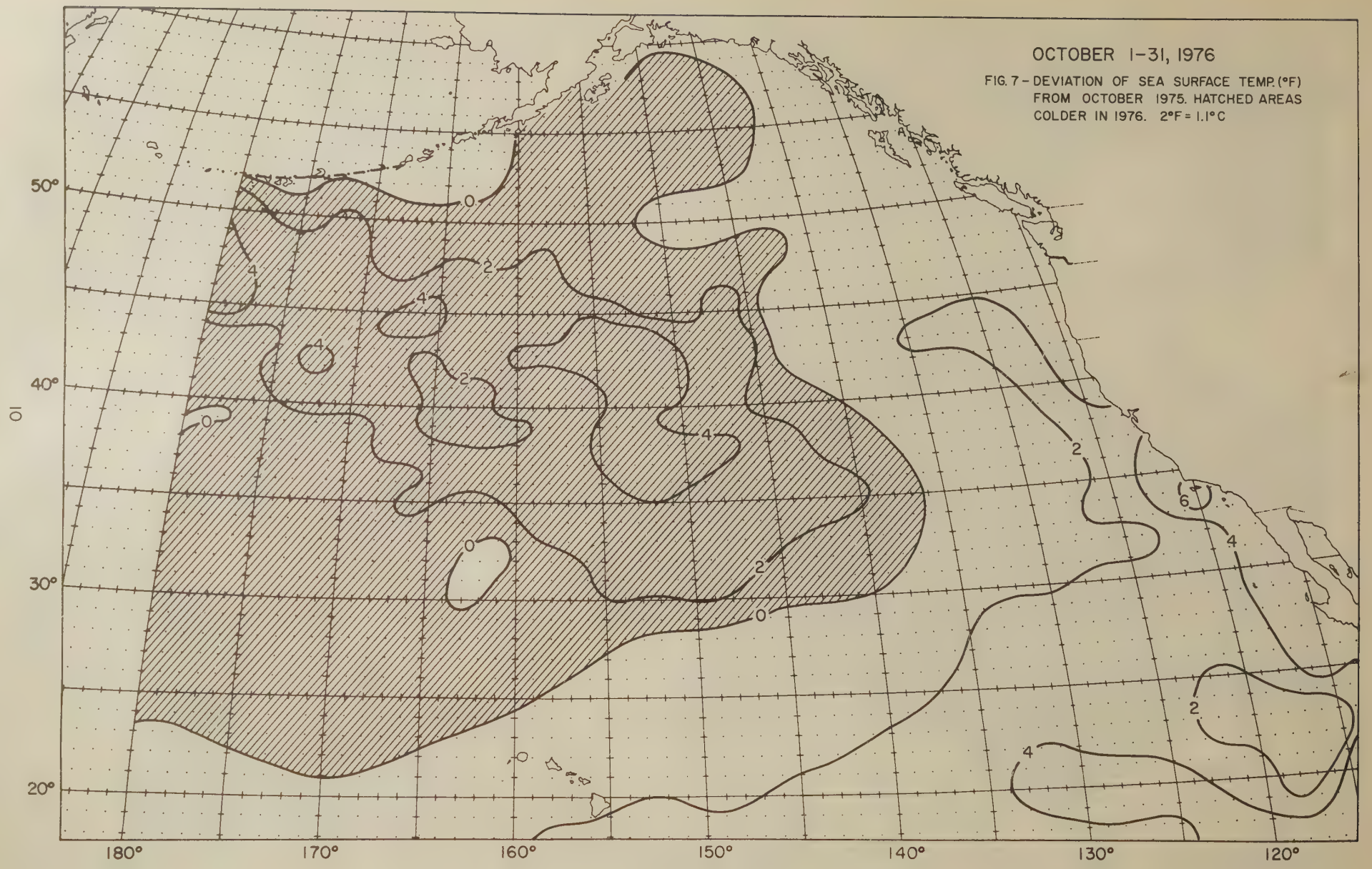

OCTOBER 1976
FIG. 2 — OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1000
1004
1008
1012
1016
1020
1016
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

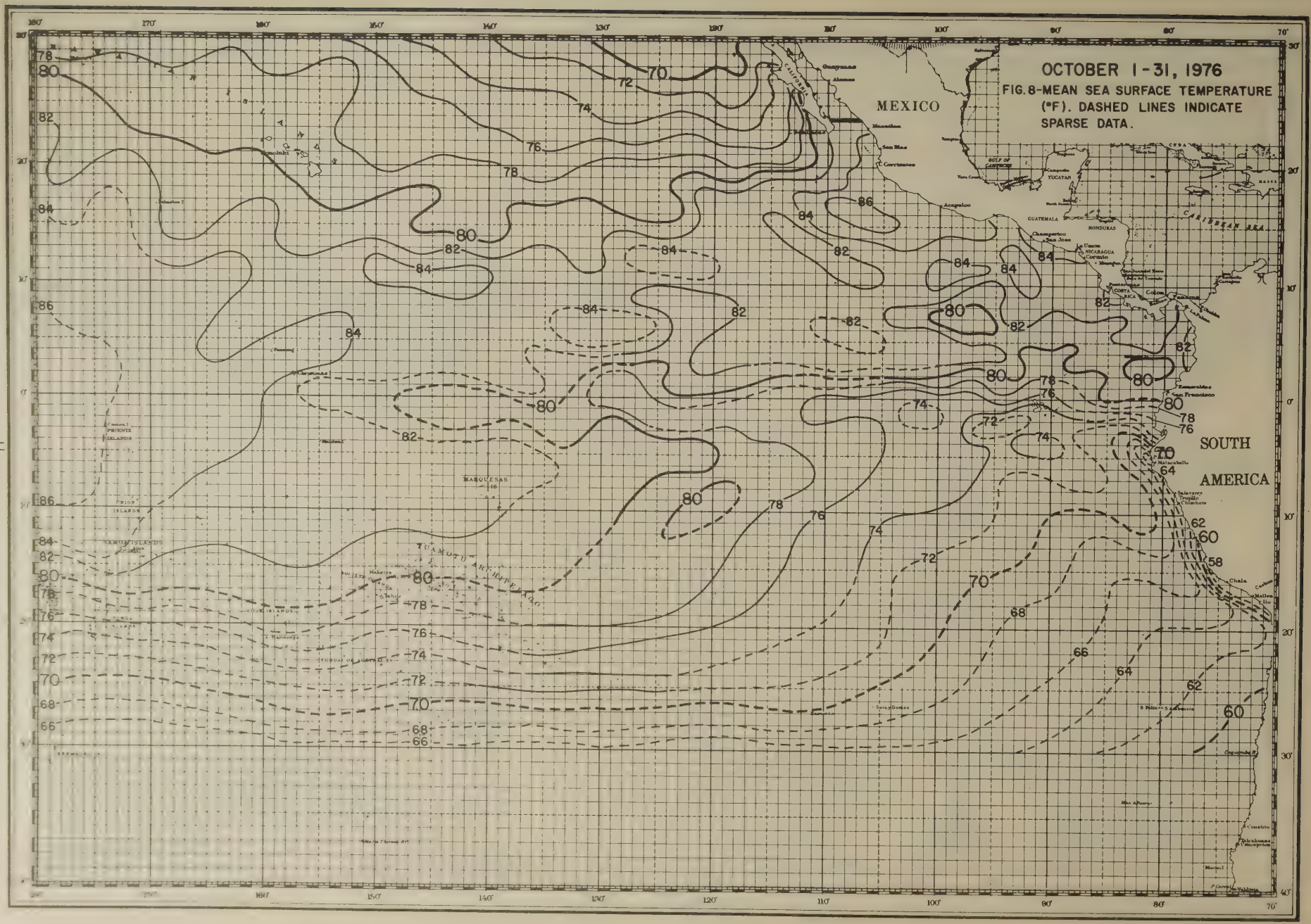

OCTOBER 1-31, 1976
FIG. 3-MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


OCTOBER 1-31, 1976
FIG.4-MEAN SEA SURFACE TEMPERATURE (°F)
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
86
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


OCTOBER 1-31, 1976
FIG. 5- DEVIATION OF SEA SURFACE TEMP. (°F.) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1976.
2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
2
4
0


OCTOBER 1-31, 1976
FIG. 6 – DEVIATION OF SEA SURFACE TEMP. (°F.)
FROM 20 YEAR MEAN (1948–1967).
HATCHED AREAS COLDER IN 1976.
2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


OCTOBER 1-31, 1976
FIG. 7 - DEVIATION OF SEA SURFACE TEMP. (°F) FROM OCTOBER 1975. HATCHED AREAS COLDER IN 1976. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4
6


OCTOBER 1-31, 1976
FIG. 8-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CALIFORNIA
YUCATAN
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
MARQUESAS
TUAMOTU ARCHIPELAGO
PHOENIX ISLANDS
CRIOA ISLAND
YAMMU ISLANDS
TUVALU
Acapulco
Guayaquil
Callao
Trujillo
Chimbote
Valparaiso
Chala
Arica
Iquique
Tahiti
Easter Island
Galapagos Is.
Juan Fernandez Is.
Mas Afuera
Mas a Tierra
Coquimbo
Concepcion
Talcahuano
Valdivia
Chiloe I.
Pisagua
Antofagasta
Mollendo
Callao
Paita
Manta
Esmeraldas
San Francisco
Buenaventura
Cristobal
Colon
Puntarenas
San Jose
Champerico
Corinto
Manzanillo
Mazatlan
Guaymas
Ensenada
San Diego
Los Angeles
San Pedro
Monterey
San Francisco
Eureka
Juneau
Sitka
Kodiak
Dutch Harbor
Honolulu
Midway
Wake
Guam
Yokohama
Tokyo
Kobe
Nagasaki
Shanghai
Hong Kong
Manila
Singapore
Jakarta
Sydney
Melbourne
Auckland
Wellington
Christchurch
Dunedin
Hobart
Perth
Fremantle
Adelaide
Darwin
Brisbane
Noumea
Suva
Apia
Pago Pago
Nuku'alofa
Rarotonga
Papeete
Pitcairn I.
Valparaiso
Montevideo
Buenos Aires
Rio de Janeiro
Santos
Recife
Fortaleza
Belem
Manaus
Iquitos
Lima
Guayaquil
Quito
Bogota
Cali
Medellin
Barranquilla
Cartagena
Maracaibo
Caracas
Trinidad
Port of Spain
Georgetown
Paramaribo
Cayenne
Fernando de Noronha
Ascension I.
St. Helena
Tristan da Cunha
Gough I.
Cape Town
Port Elizabeth
East London
Durban
Lourenco Marques
Beira
Dar es Salaam
Mombasa
Zanzibar
Aden
Muscat
Karachi
Bombay
Madras
Colombo
Calcutta
Rangoon
Bangkok
Saigon
Hanoi
Taipei
Naha
Sapporo
Vladivostok
Petropavlovsk
Nome
Anchorage
Kodiak
Juneau
Sitka
Prince Rupert
Vancouver
Seattle
Portland
San Francisco
Los Angeles
San Diego
Ensenada
Guaymas
Mazatlan
Manzanillo
Acapulco
Salina Cruz
Puerto Madero
Champerico
San Jose
Corinto
Puntarenas
Colon
Cristobal
Buenaventura
Esmeraldas
Manta
Paita
Callao
Mollendo
Arica
Iquique
Antofagasta
Valparaiso
Talcahuano
Concepcion
Coquimbo
Mas a Tierra
Mas Afuera
Juan Fernandez Is.
Galapagos Is.
Easter Island
Pitcairn I.
Papeete
Rarotonga
Nuku'alofa
Apia
Pago Pago
Suva
Noumea
Brisbane
Darwin
Fremantle
Perth
Adelaide
Hobart
Melbourne
Sydney
Auckland
Wellington
Christchurch
Dunedin
Chatham Is.
Norfolk I.
Lord Howe I.
Brisbane
Townsville
Cairns
Thursday I.
Port Moresby
Rabaul
Truk
Guam
Saipan
Yap
Palau
Manila
Hong Kong
Shanghai
Taipei
Naha
Yokohama
Tokyo
Kobe
Nagasaki

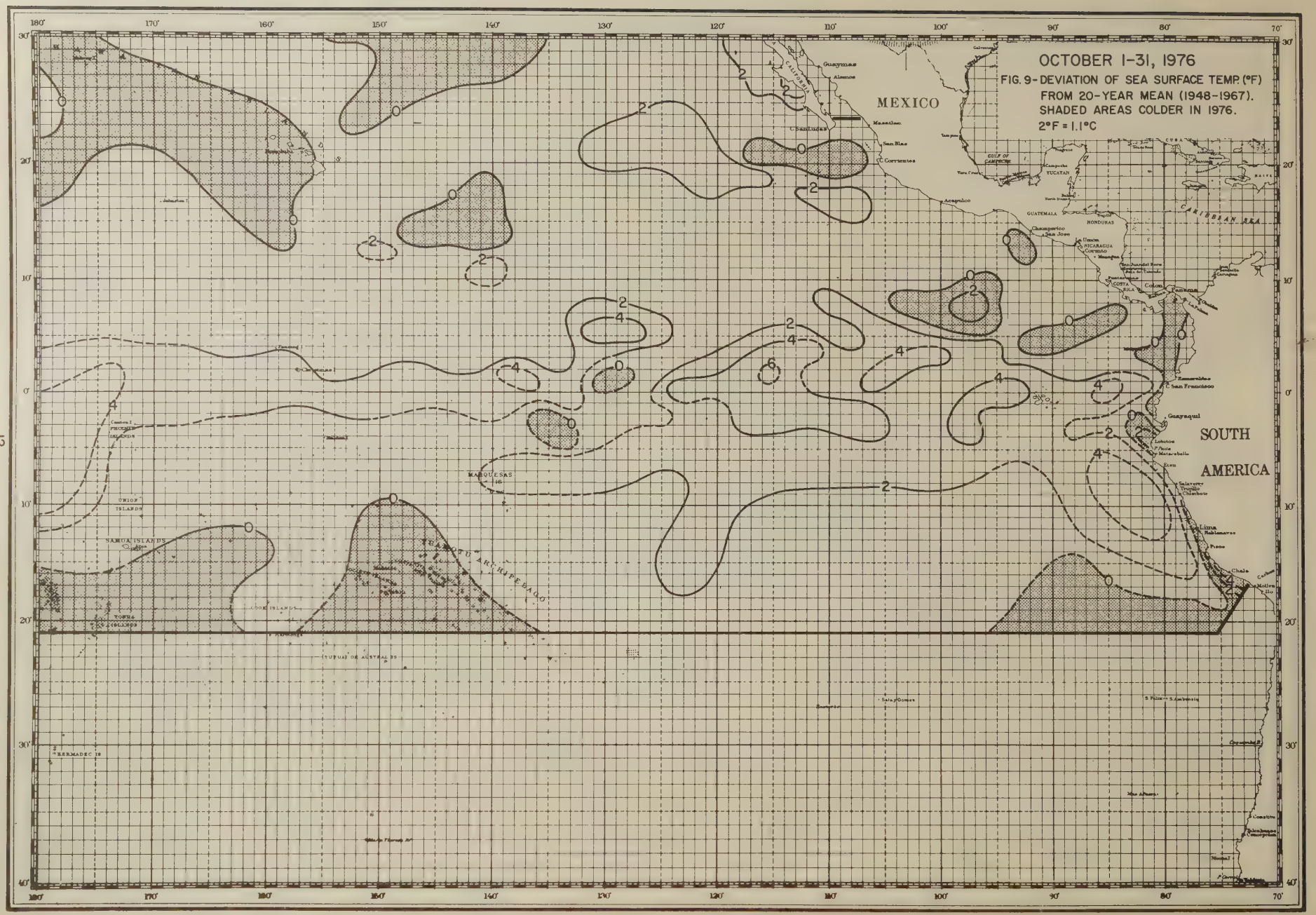
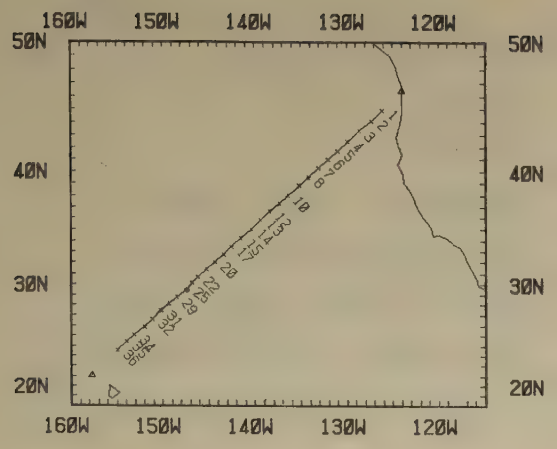
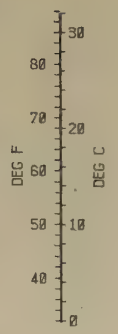

OCTOBER 1-31, 1976
FIG. 9- DEVIATION OF SEA SURFACE TEMP. (°F)
FROM 20-YEAR MEAN (1948-1967).
SHADED AREAS COLDER IN 1976.
2°F = 1.1°C
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
Guaymas
Mazatlan
San Blas
C. Corrientes
Acapulco
Champerico
San Jose
Corinto
Balboa
Colon
Panama
Esmeraldas
San Francisco
Guayaquil
Salaverry
Trujillo
Chimbote
Lima
Pisco
Chala
Mollendo
Arica
MARQUESAS
16
TUAMOTU ARCHIPELAGO
SAMOA ISLANDS
COOK ISLANDS
TONGA ISLANDS
TUTUAU OR AUSTRAL IS
BERMADEC IS
Sala y Gomez
S. Felix
S. Ambrosio
Mas Afuera
Constitucion
Talcahuano
Concepcion

FIGURE 10





SHIP CALIFORNIAN

VOYAGE 276

MATSON

MAKAPUU PT, OAHU, HAWAII

- PORTLAND, ORE.

04 OCT 1976 - 10 OCT 1976

NOAA-NMFS PEG MONTEREY, CA.

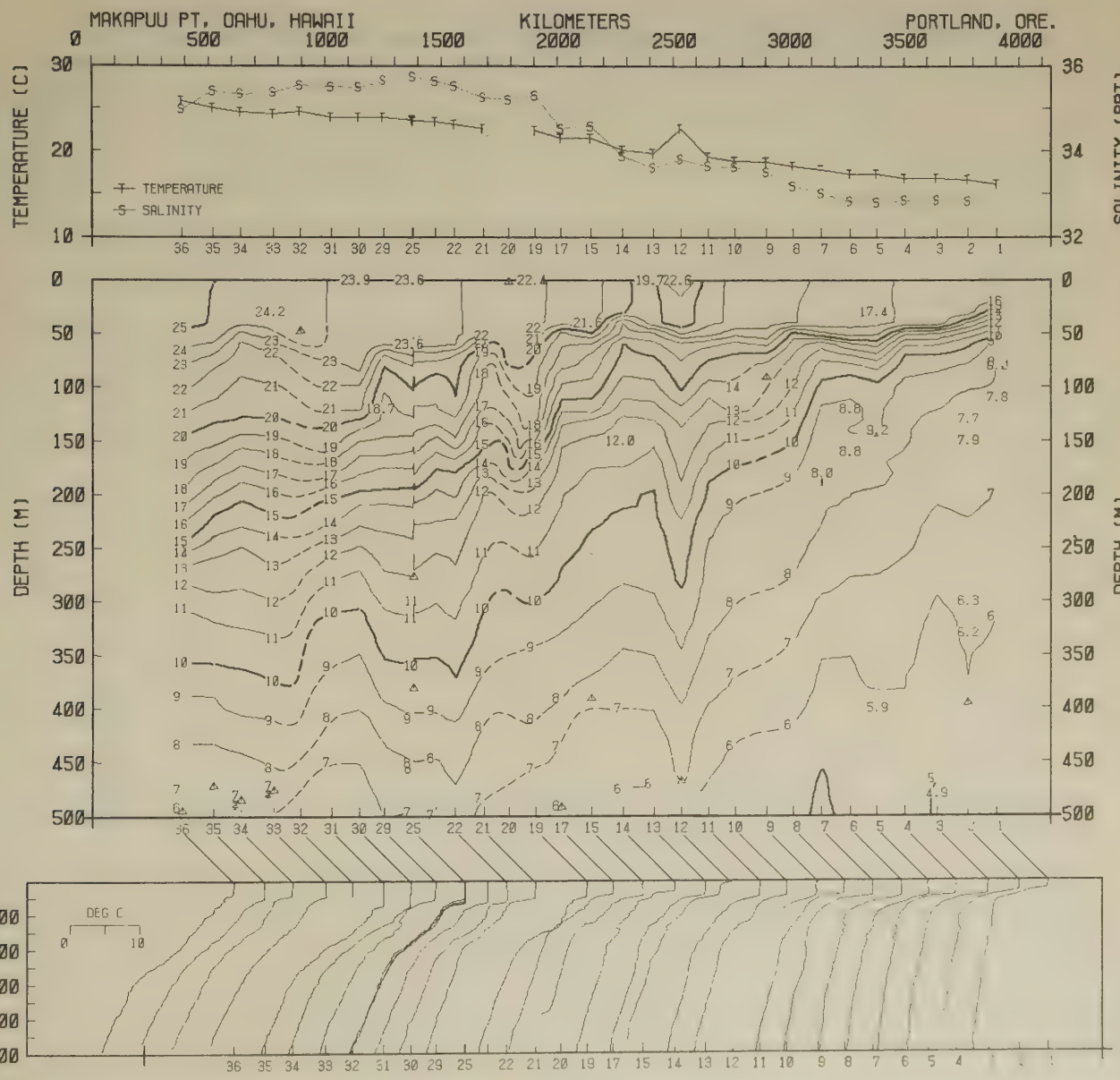
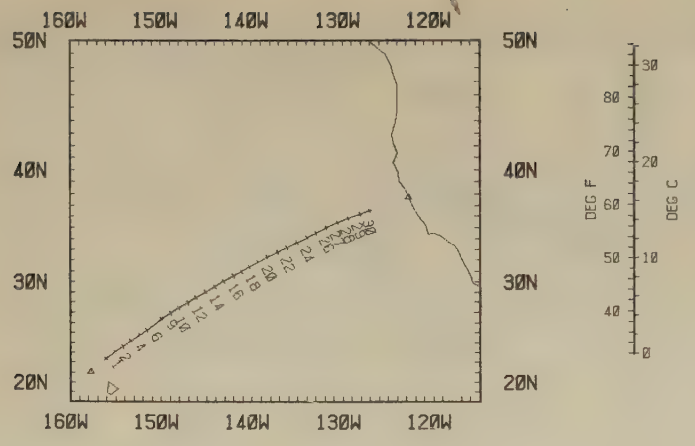


FIGURE 11



SHIP CALIFORNIAN
VOYAGE 276
MATSON
MAKAPUU PT, OAHU, HAWAII
- SAN FRANCISCO, CA.
13 OCT 1976 - 19 OCT 1976
NOAA-NMFS PEG MONTEREY, CA.

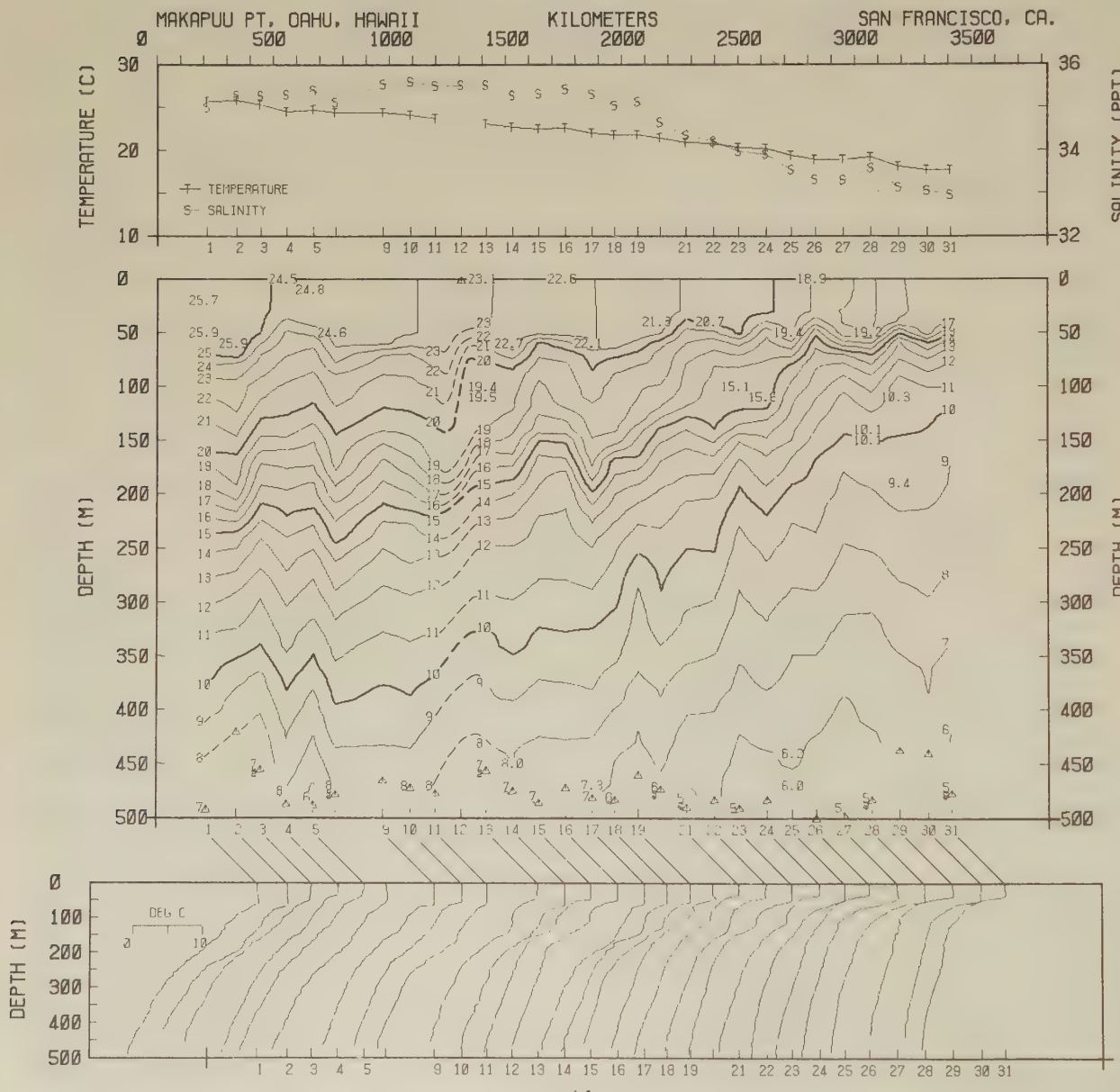
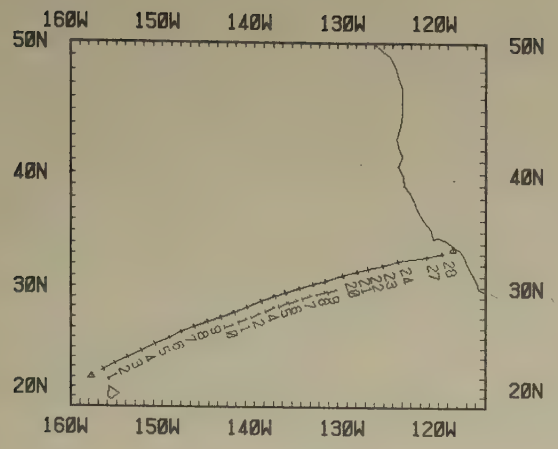


FIGURE 12



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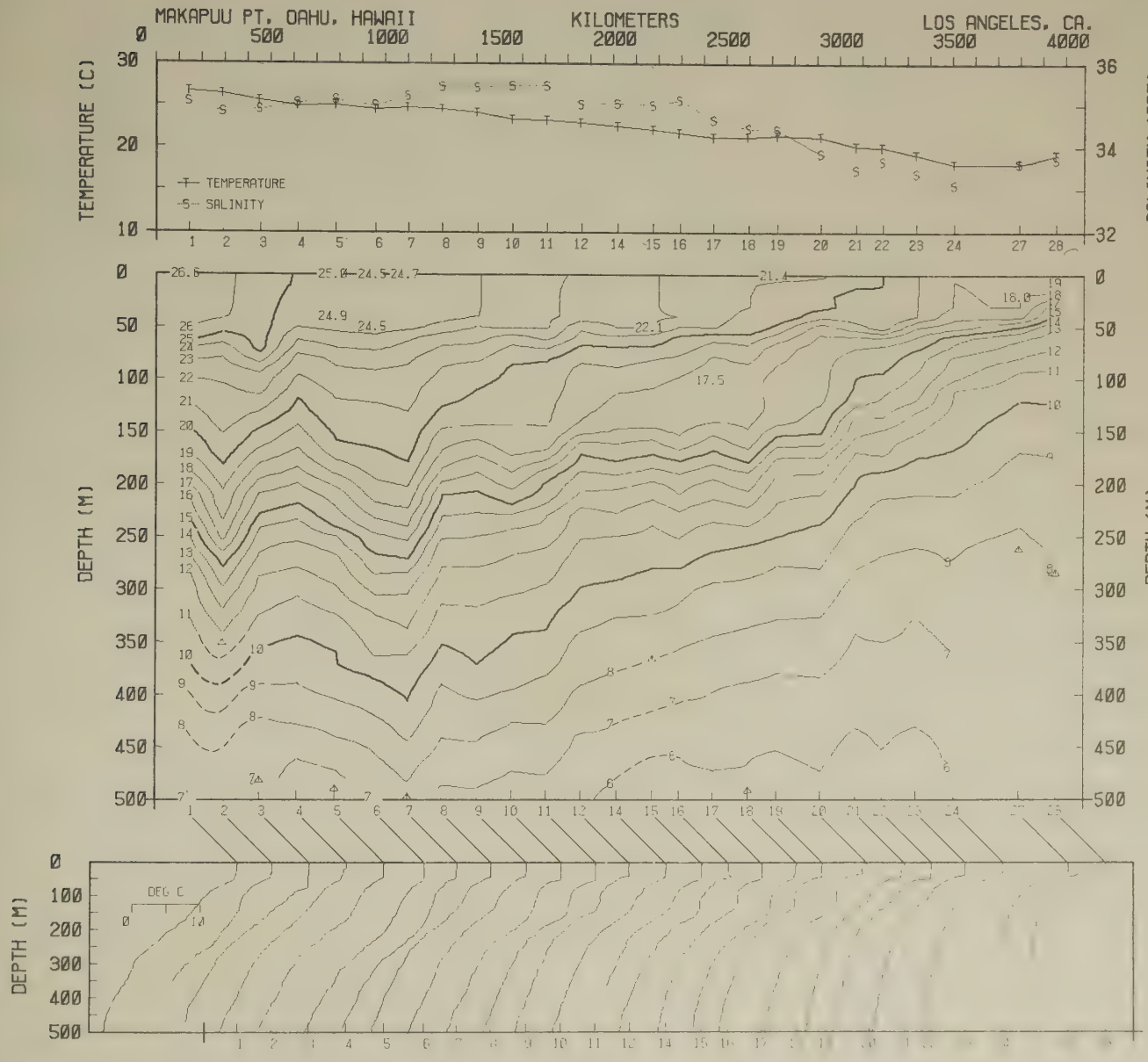

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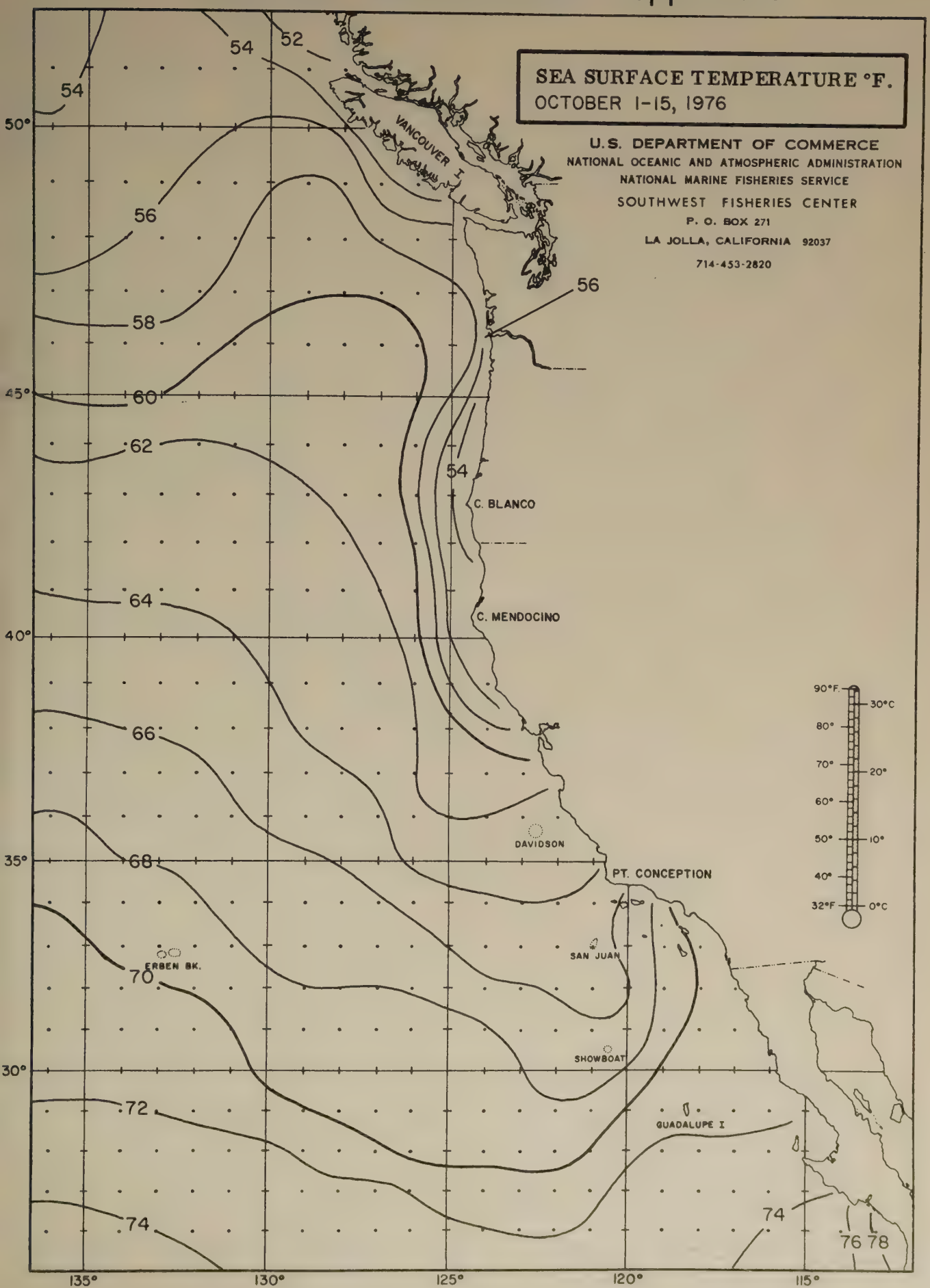

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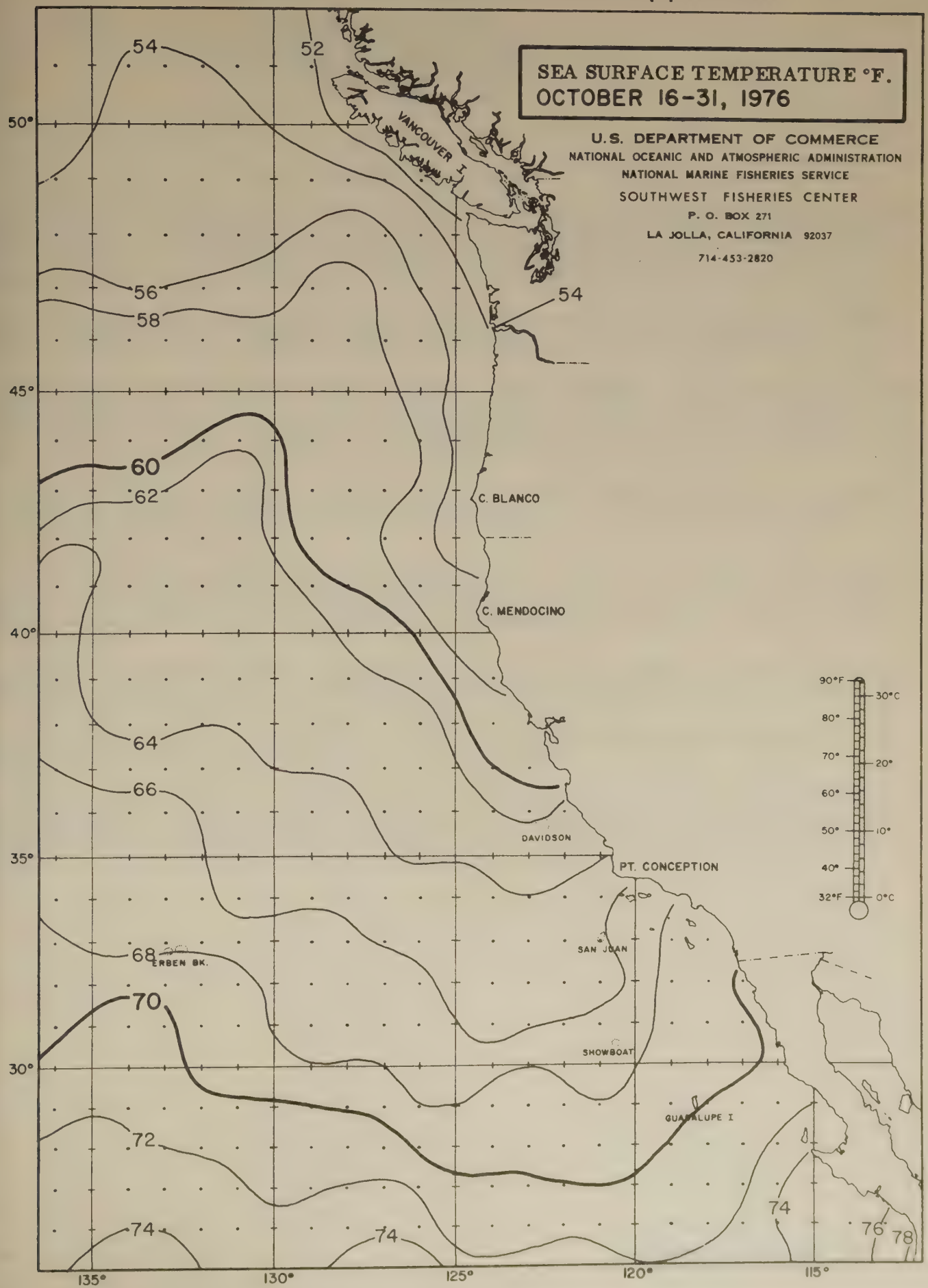

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
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BULLETIN NO. 76-8

AFRF CHARTER BOATS CONTINUE SCOUTING

The three jigboats chartered to the American Fishermen's Research Foundation (AFRF) scouted for albacore in three separate nearshore areas during September 16-30. The AFRF charter vessel Lusty left San Diego on September 18 and worked south to the Dumping Grounds then out 300 miles west of San Diego, after which he worked northward outside the San Juan Seamount to an area 150 miles off of San Francisco. Fish were caught every day with scores of 22-63 fish averaging 11-16 pounds off of San Diego and mixed fish averaging 8-15 pounds off of San Francisco. Sea-surface temperatures decreased from 68°F to 60°F (20.0°C to 15.6°C) as the F/V Lusty moved northward.

The AFRF charter vessel Sunrise departed San Francisco on September 13 and worked an area 80-130 miles offshore from Pt. Arena to just south of Monterey until September 25 when engine trouble forced them to return to San Francisco. Scores were 7-48 fish averaging 12 pounds and water temperatures were 59-61°F (15.0-16.1°C).

The third AFRF chartered jigboat, Lady Olga, left Newport, Oregon on September 17 after running in to avoid rough weather and worked south towards Mendocino Ridge. Good fishing was found from Crescent City south to Mendocino Ridge with the Lady Olga landing up to 264 fish one day and over 150 on three other days. Large schools of jumpers were seen as well as birds and porpoise working on bait. Fish schools were mixed as three size groups of 7-9 pounds, 11-14 pounds and 16-20 pounds were caught in the same area with sea-surface temperatures of 62.5-63.5°C (17.0-17.5°C). Fishing became poor on September 25 when gale force winds curtailed fishing effort in the area.

Commercial jigboats found slow but consistent fishing the last 2 weeks of September off of southern California and Northern Baja California as scores of 20-80 fish were reported from Cortez Bank, the Dumping Grounds, and off of Cape Colnett in 66-68°F (18.9-20°C) water. Some 30-50 fish scores were also reported by boats off of Monterey with fish averaging 11-14 pounds.

Excellent fishing occurred during the third week of September off of Pt. Arena to Ft. Bragg and up to Mendocino. Jigboat scores averaged 200 fish with high scores of 400-500 and fish weighing 8-20 pounds. Baitboats in this area also reported good fishing. Gale force winds up to 40 knots forced boats fishing from Pt. Arena to Mendocino to return to port on September 25, but boats landed 90-100 fish on the way in and are expected to resume fishing when the winds have abated.

Seasonal cooling continued over most of the Eastern North Pacific between the west coast of North America and 135°W longitude during the second half of September. Sea-surface temperatures decreased by 2-4°F (1.1-2.2°C) in waters offshore the Pacific Northwest and by 1-2°F (0.6-1.1°C) west of California and Baja California.

Exceptions to this cooling trend occurred in nearshore waters along the entire coast from Vancouver Island south to Baja California where temperatures rose 1-2°F (0.6-1.1°C) from values during the first half of the month. Consequently, coastal temperatures are now 1-2°F (0.6-1.1°C) above normal.

According to the Long Range Prediction Group of the National Weather Service, major storm systems that develop in the Gulf of Alaska are expected to follow a northern track into western Canada during October. However, secondary systems that develop will move inland over the Pacific Northwest and northern California causing strong south to southwesterly winds and rough seas. Since fall is a transitional season, wind conditions off central and southern California will vary with less frequent periods of strong north to northwesterly winds.

October 1, 1976

Staff, Albacore Fisheries Program
R. Michael Laurs, Leader

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92038

BULLETIN No. 76-9

ALBACORE FISHING CONTINUES; TOTAL SEASONAL LANDINGS DOWN

Jigboats returned to the Mendocino Ridge area on October 1 as winds decreased to 20 knots and immediately found ood fishing with scores of 200-250 fish. The fish weighed 6-20 pounds with boats working bird schools and jumpers n 60°-61°F (15.6°-16.1°C) water. Fishing continued to be good, although spotty, with scores of 50-300 fish the irst 2 weeks of October with occasional days of high winds. The average size of the fish decreased in the latter art of the second week, the majority weighing 6-8 pounds with some big fish.

There were scattered catches of 15-20 fish from Fort Bragg to Point Arena and 20-30 fish off of Monterey during ctober 1-15, with a few fish showing off of Morro Bay the second week. Fair fishing on 12-14 pound fish was found round Pioneer and Guide Seamounts in 60°-64°F (15.6°-17.8°C) water with average scores of 150 fish the first week, ecreasing to 40-50 fish the second week. Baitboats were catching up to 1 ton of albacore per day off of Avila Beach uring the second week of October.

Commercial boats working off of southern California and northern Baja California continued to have slow fishing uring early October. Fishing was concentrated between Cortez Bank and the Dumping Grounds in 66°-68°F (18.9°-20.0°C) ater. Jigboats averaged 20-50 fish and baitboats caught ¼ to 1½ ton per day with fish weighing 6-30 pounds. Some igboats landed up to 150 fish by chumming their jiglines with bait.

The jigboats Lady Olga and Lusty completed their charters for the American Fishermen's Research Foundation (AFRF) n October 1 and October 5, respectively. The Lady Olga was tagging fish off of Eureka and the Lusty scouted the rea around Pioneer Seamount where he caught 130 fish on October 1. The Lusty then worked southeast and caught 10-66 lbacore on the way into Moss Landing.

A total of 290 albacore were tagged by the jigboats Lusty, Lady Olga and Sunrise on the final inshore charter of 976 for the AFRF. There were 1401 albacore tagged and released by AFRF charter vessels in 1976 with 976 of these ut out nearshore during the regular season.

Seasonal landings for albacore through October 15 are approximately 32 million pounds.

Seasonal cooling occured at below-normal rates over most of the Eastern North Pacific between the west coast of orth America and 135°W longitude during the first half of October. Sea-surface temperatures decreased by 1-2°F (0.6-.1°C) along the coast from Vancouver Island south to Point Reyes and are either slightly above or slightly below ormal in this region.

Exceptions to this cooling trend occurred along the coast south of Point Reyes where temperatures rose by 1-2°F 0.6-1.1°C) and coastal temperatures are now 2-4°F (1.1-2.2°C) above normal off southern and Baja California.

According to the Long Range Prediction Group of the National Weather Service, major storm systems that develop n the Gulf of Alaska will continue to follow a northern track into western Canada from mid-October through mid-ovember. It is expected that there will be fewer secondary systems moving inland over the Pacific Northwest than uring the previous 30-day period due to an expected increase in the zonal westerlies over this region. Winds will ontinue to be fairly strong from the north along central and southern California except during Santa Ana conditions hen they will decrease and become more easterly.

ctober 15, 1976

Staff, Albacore Fisheries Program
R. Michael Laurs, Leader